

## **Appendix Q.**

### **Pine and Swallow Report on Playing Field Management**



# **Arlington Playing Field Management Report**

**Prepared for**

**Arlington Park and Recreation Commission**

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***Pine & Swallow Associates, Inc.***

***Environmental Science, Engineering and Design***

## 6. CONCLUSIONS AND RECOMMENDATIONS

### 6.1 GENERAL RECOMMENDATIONS

The extremely high use of sports fields in Arlington has resulted in deteriorated conditions of the fields. Survey results indicate that the current high demand for use will continue or increase over the next several years. Even if new fields are added to the existing inventory, all fields will continue to be subjected to high use conditions. In order to accommodate projected use the fields must have adequate surface drainage and internal soil drainage, good quality topsoil, irrigation and ongoing regular maintenance. Our analysis indicates that, given the anticipated field use, the only means to achieve and retain reasonable field conditions is that the Town continue to upgrade fields to achieve appropriate physical conditions and that it establish ongoing maintenance systems that will retain the value of that investment. We recommend the following specific steps:

1. The Town should continue to systematically upgrade its fields. Except for recently upgraded areas all fields require modifications to topsoil, subsurface drainage and/or grading. Replanting of these fields without related modifications is not recommended.
2. As each field is reconstructed the Town should establish a maintenance program for that field that will ensure appropriate routine care as well as control of weeds and pests.
3. The Park and Recreation Commission should continue to encourage and expand participation of user groups in the management of the fields.
4. The Park and Recreation Commission should work with other Town departments to educate the public as to the requirements of and need for maintaining high quality fields including the requirements for capital expenditures and ongoing maintenance and the need for use of some herbicides and pesticides where alternatives are not available.

#### *Field Reconstruction Recommendations*

1. Modify the topsoil at each field to achieve a gradation within recommended limits for sports fields. Incorporation of sand and/or compost will be required on most fields.

2. Modify subsoil conditions to improve subsurface drainage through mixing of sand, deep tine sand aeration, or installation of subsurface drainage where required.
3. Install irrigation systems within all heavily used field areas.
4. Seed with tall fescue, bluegrass, ryegrass mix such as Lofts Athletic Field Mix. Allow a full season of growth after replanting for turf to become established prior to use. Incorporate fiber reinforcement such as Turfgrids® in front of goals and in the center area of soccer fields where wear is highest.

#### ***Maintenance Recommendations***

1. Establish upgraded maintenance procedures to be followed as each field is reconstructed. Determine which procedures can effectively and economically be carried out by Town personnel and contract with private companies for other tasks.
2. Utilize professional turf consultants for minimum yearly inspections and when specific problems develop.
3. Establish a field maintenance coordinator position with responsibility for ensuring private and town maintenance tasks are carried out and for working with user groups to assist in management.
4. Establish procedures for herbicide and pesticide use including safe handling, storage and public awareness.

#### ***Field Use Recommendations***

1. Alter use patterns on each field to vary wear as much as possible by utilizing different portions of fields for practice.
2. For larger field areas, periodically relocate or reorient field lines to create altered wear patterns associated with game use.
3. Limit the use for fields for intense sports such as football or adult soccer after periods of rain. Wear increases very rapidly when fields are subjected to cleats when fields are in a wet condition.

## 6.2 FIELD BY FIELD RECOMMENDATIONS

### Bishop

- Turf within the portion of the field utilized for soccer has deteriorated and needs to be replanted. Bishop has a wear rating of 78 which is very high. This rating is in large part due to the presence of very silty topsoil which is inappropriate for intense sports field use.
- The primary issue limiting use at Bishop is very silty topsoil. In order to correct this deficiency we recommend that a relatively high percentage of sand be incorporated into the loam. This may necessitate incorporating compost as well in order to maintain an adequate organic content.
- Although gradients within playing fields are adequate, areas outside the primary playing fields drain onto the field areas. We recommend that storm water entering the property along the easterly boundary be diverted toward the south around the field area by construction of a shallow swale.
- Subsoil conditions varied greatly in the two locations tested. We recommend that further shallow investigations be carried out to determine the extent of free draining and poorly draining soils. Use of portions of the fields for soccer should be limited to the areas underlain by free draining soils or else the amount of use should be curtailed.
- Reconstruction of the center field area where there are relatively steep slopes is expensive and appears not to be warranted at this time.
- Modification of subsoils or installation of subsurface drainage are also expensive and may not be warranted unless there is an anticipated need for intensive use of this field for soccer.
- Drainage off the sports field area into the children's play area is inappropriate and should be modified. Drainage across the infield toward home plate is also inappropriate and should be corrected if there is a general reconstruction of the fields.

### Buck

- Turf at Buck has begun to deteriorate and will require intensive maintenance in order to preclude complete replanting. Such maintenance should include both weed control and overseeding. Buck has a wear rating of 34 which is among the lower of the fields in Arlington.

- Although subsoil conditions limit internal drainage and surficial grading is minimal, the field is not used for soccer and therefore can continue to accommodate its current use without modification of these factors.

### **Buzzell**

- Buzzell has very poor turf and extensive weeds and will require replanting. Buzzell has a wear rating of 50 due primarily to poor grading and poor subsurface drainage.
- The continued intensive use of Buzzell for soccer will require modification of surficial grading. Since the field area is large, it is probable that free draining fill will be required in order to raise grades in the center portion of the field area. Limitations, if any, on the placing of fill over the sewer line which runs through this area must be checked prior to the placement of any new fill.
- Further subsurface investigations are required prior to any significant reconstruction of Buzzell to determine the extent of compressible or organic fill materials that could lead to future settlements and the need to modify subsoil conditions.

### **Florence**

- Florence has essentially no grass and requires replanting. Florence has a wear rating of 50 due to intermediate loam, subsoil and surficial grading conditions.
- As a part of field reconstruction we recommend that the gradation of the topsoil be modified by the incorporation of sand.
- Although some improvement in wear rating can be achieved by regrading and improvement of subsoils, these investments are of more borderline value than for most other fields and therefore do not appear to be warranted at this time.
- If possible, a swale should be constructed along the easterly side of the field where water runs onto the field area in order to carry storm water around the field.
- Since the playable field area at Florence is wider than the current soccer field, we recommend that movable rather than permanent soccer goals be utilized so that the field lines can be shifted periodically. Such shifting can reduce wear in the primary areas and extend the life of the field.

## Hills

- Hills has essentially no grass and requires replanting. Hills has a wear rating of 28 which is the lowest of the Arlington fields. The excessive wear at Hills appears to be the result of dry conditions during summer periods and excessive storm water draining onto the fields during wet periods.
- A stormwater culvert discharges water onto the hillside above the Hills soccer field. This water must be diverted around the field in order to avoid wear due to excessively wet localized conditions. Stormwater which drains onto the field area from the adjacent hillside should also be diverted around the fields through the construction of shallow swales.
- Since the playable field area at Hills is both wider and longer than the current soccer field, we recommend that the field lines be shifted periodically in order to reduce wear in the primary areas and extend the life of the field.

## Hurd

- The turf on the portion of Hurd Field which was utilized for soccer deteriorated rapidly and this area needs to be replanted. Hurd has a very poor wear rating of 80 due to poor loam, subsoil and grading. In addition, Hurd may have a relatively high water table during the spring although no data is available regarding this matter.
- If Hurd is to be utilized for intensive soccer use, it should be entirely reconstructed to achieve improved surface grading and subsoil conditions. The loam should also be modified to improve its gradation.
- Prior to a major reconstruction of Hurd, data on ground water levels during wet spring periods should be obtained to determine if subsurface drainage is required in order to allow use of the fields during the early spring.
- Until Hurd is reconstructed, we recommend that the use of the fields for soccer be limited to dry periods.
- Use of the irrigation system should be monitored to ensure that excess water is not applied to the fields since the soils tend to hold more moisture than is desirable.
- Maintenance of Hurd should include aeration twice a year by plug removal and top dressing with sand to incorporate sand into the aeration holes.

### **Magnolia**

- Magnolia has essentially no turf, apparently due primarily to dry conditions. Magnolia has a moderate wear rating of 34 with good topsoil gradation but moderate to poor subsoil drainage. Settlements appear to have modified the grades at Magnolia causing poor play field conditions.
- It is understood that the possible presence of oil or hazardous material was identified during a test pit investigation at this site and has been reported to DEP. Further investigation of this matter should be carried out prior to any field reconstruction.
- The grading at Magnolia must be modified to reduce excessively sloping areas. Since this regrading will require stripping the topsoil, we recommend that the subsoil be modified by incorporation of sand into the subgrade.
- We recommend that the causes of settlements be investigated to ensure that future settlements do not occur. If the causes can not be determined, we recommend that grades be lowered or remain at approximate current elevations in order to prevent new primary settlements from beginning.

### **North Union**

- North Union was reconstructed during this investigation and therefore was not included in the study.

### **Ottoson**

- Ottoson was being utilized for a construction staging area during this investigation resulting in the loss of existing turf and the probable over-compaction of soils. Ottoson has a relatively good wear rating of 36.
- When Ottoson is reconstructed following its use as a staging area, it is essential that soils be loosened to reduce compaction. A limited subsurface investigation will be required to determine the extent of compaction and the amount of loosening that will be required.
- We recommend that a small amount of sand be incorporated into the topsoil to improve its gradation. If the topsoil is stripped as a part of reconstruction, we recommend that the subsoil be modified by deep tine sand incorporation.

### **Peirce Football**

- The center area of the Peirce Football Field has essentially no turf. It is understood that this area will be re-sodded in the spring. The Peirce Football Field has a poor wear rating of 64 due primarily to very silty topsoil.
- Since this field is now irrigated, any reconstruction, even to modify the topsoil, will be expensive. We therefore recommend that the field receive limited use except for football games until a complete reconstruction is warranted.
- The crown of the field should be maintained or, if possible, increased in order to maximize surface runoff since the topsoil is silty and will tend to retain excessive moisture. The field should not be irrigated during the day of, or the day preceding, its use for football games.
- Maintenance of Peirce should include aeration twice a year by plug removal and top dressing with sand to incorporate sand into the aeration holes. The use of the field could be further improved by drilling deeper holes through the topsoil and filling with sand.

### **Peirce Baseball**

- The turf in the portion of the Peirce Baseball Field which has been used as a practice football field area is in very poor condition and must be replanted. Other areas have moderate to poor turf with heavy weed infestations and should also be replanted. The Peirce Baseball Field area has a moderate to poor wear rating of 44 due primarily to silty topsoil.
- Although surface grading is generally good, construction of a swale along the base of the slope that extends across right field and along the right field line would direct runoff from the slope around the field and improve conditions after rain storms.
- We recommend that the entire turf area be reconstructed and that sand be incorporated into the loam to improve its gradation.
- The third base area needs regrading to eliminate ponding of water that occurs in that area.

### **Peirce Little League**

- The turf in the Peirce Little League Field area is poor, especially in areas which have been used for soccer or practice football. All turf areas need to be

replanted. The Peirce Little League Field area has a very poor wear rating of 74 due to silty topsoil and subsoil and poor surface grading.

- If this area is to accommodate heavy use for football practice or soccer, it will require complete reconstruction to improve surface grading, modify subsoil conditions by deep tine sand incorporation and to modify the topsoil by the incorporation of sand.

### **Poet's Corner**

- The turf at Poet's Corner is moderate to poor with heavy weed infestations. Although it may be possible to rehabilitate the turf without a complete replanting, the area has very poor surface grading and therefore requires more extensive reconstruction. Poet's Corner has a poor wear rating of 56 due primarily to silty loam and very poor grading.
- We recommend that planning work to evaluate the use of this area be carried out prior to reconstruction of this field. The present baseball use means that long fly balls to right field can hit cars on the road. The area may be suitable for use as a soccer field if it is reconstructed. The potential for obtaining and using the adjoining badly settled parking area should also be considered prior to any major reconstruction.
- When Poet's Corner is reconstructed the gradation of the topsoil should be modified by the incorporation of sand. However, the gradation of the existing loam makes it susceptible to compaction and therefore, the gradation of any sand to be added should be chosen to make the final soil less compactable.

### **Robbins Farm**

- The turf in the portion of Robbins Farm which has been utilized for soccer is very poor and will require replanting. Turf over the remainder of the area is moderate to poor with heavy weed infestations. Robbins Farm has an extremely poor wear rating of 84 due to silty topsoil and subsoil and inadequate surface grading. The surface grading is exacerbated by storm water which drains onto the field from adjacent sloping land.
- If Robbins Farm is to be used for soccer we recommend that it be reconstructed to modify surface grading. It is probable that such regrading will require the addition of sand to raise grades. If this is the case the cost of including some subsurface drainage should also be evaluated.

- If the area is to be used only for limited baseball activities, the field areas could be replanted without complete reconstruction. If this is the case maintenance should include aeration twice a year by plug removal and top dressing with sand to incorporate sand into the aeration holes.

### **Scannell**

- Scannell Field, which has an existing irrigation system, has moderate turf with heavy weed infestations. Scannell has a very poor wear rating of 82.
- Since Scannell has an existing irrigation system, reconstruction of the field or modification of the topsoil is expensive. Since the field is only used for little league baseball, its more limited use can be accommodated with careful maintenance.
- We recommend that the irrigation system be carefully monitored. The poor surface grading and silty topsoil may cause rapid wear if the field is wet during periods when it is being used.
- We recommend that strong weed control and overseeding be utilized immediately in order to stop deterioration of this field before complete replanting is required.
- Maintenance of Scannell should include aeration twice a year by plug removal and top dressing with sand to incorporate sand into the aeration holes.

### **Spy Pond**

- The Spy Pond Fields were reconstructed during this investigation and therefore were not included in the study.

### **Summer**

- Summer has moderate to poor turf and should be replanted. Summer has a poor wear rating of 58 due to silty loam and subsoil.
- The gradation of the topsoil at Summer should be modified by deep tine incorporation of sand. Other improvements do not appear to be warranted.
- Turf vigor will be improved by nutrient additions.

### **Thorndike**

- Thorndike has little or no turf in the areas used for soccer and must be replanted. Thorndike has an extremely poor wear rating of 96 due to silty topsoil and subsoil and inadequate surface grading. Thorndike also appears to have a high water table during wet periods.
- Thorndike will continue to wear any replanted turf rapidly unless it is entirely reconstructed. Reconstruction should include the addition of a subsurface drainage system and modification of the topsoil with incorporation of sand.
- Since reconstruction of Thorndike is very expensive, consideration could be given to utilizing this area only for late spring and summer baseball use instead of reconstruction.
- Additional subsurface investigations as well as a determination on where subsurface drainage water can be discharged should be carried out prior to proceeding with redesign of this area.

### **6.3 TURF MAINTENANCE**

In order to accommodate the heavy play use on Arlington's fields, a strong and comprehensive turf grass maintenance program is essential. While each individual task is important, it is the complete integrated maintenance master plan that serves as the cornerstone for long-term success. Necessary elements include irrigation, overseeding, fertilizer and lime application, insect and disease control, weed treatment, thatching and aeration.

While the maintenance program would be tailored to each field's specific needs at any given time, the commitment on a system wide basis must include the following monthly operations:

#### **April**

pre-emergent crabgrass control  
knotweed and broadleaf weed control  
macro-nutrient fertilizer application  
soil sampling for nutrient testing prior to fertilizing

#### **May**

irrigation monitoring  
disease control, as required  
lime application  
thatching

June

irrigation monitoring  
macro-nutrient fertilizer application  
inspection of all fields for disease, weeds and insects  
weed control as required from inspection  
disease control as required from inspection  
core aerate  
slice-seed bare and thin areas with rye and bluegrass mix such as  
Lofts Rugged Wear Overseeding Mix. In bare high wear  
areas incorporate fiber reinforcement such as Turfgrids®.  
post-emergent crabgrass control

July

irrigation monitoring  
disease control, as required  
insect control, as required  
weed control

August

irrigation monitoring  
macro-nutrient fertilizer application  
insect control, as required

September

irrigation monitoring  
weed control, as required

October

core aerate  
slice-seed bare and thin areas with rye and bluegrass mix such as  
Lofts Rugged Wear Overseeding Mix. In bare high wear  
areas incorporate fiber reinforcement such as Turfgrids®.

November

knotweed control  
macro-nutrient fertilizer application

All herbicides, pesticides and fungicides must be applied by a licensed applicator and in accordance with Massachusetts state regulations. Results of soil nutrient testing should inform decisions regarding quantity and type of fertilizer and lime.